

MATERIAL SAFETY DATA SHEET

SRM Supplier: National Institute of Standards and Technology
Standard Reference Materials Program
Bldg. 202 Rm. 211
Gaithersburg, Maryland 20899

RM Number: 8519
MSDS Number: 8519
RM Name: n-Tetradecane Flash Point
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MSDS Coordinator: Joylene W.L. Thomas
Phone: (301) 975-6776
ChemTrec: 1-800-424-9300

FAX: (301) 926-4751
E-mail: SRMMSDS@nist.gov

SECTION I. MATERIAL IDENTIFICATION

Material Name: n-Tetradecane Flash Point Reference Material

Description: A unit of RM 8519 consists of four sealed ampoules each containing 20 mL of flash point fluid.

Other Designations: Tetradecane

Name	Chemical Formula	CAS Registry Number
n-Tetradecane	C ₁₄ H ₃₀	629-59-4

DOT Classification: Not regulated by DOT

Manufacturer/Supplier: This material was supplied by Committee S-15 of the American Society for Testing and Materials (ASTM).

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Component	Nominal Concentration (%)	Exposure Limits and Toxicity Data
n-Tetradecane	~100	No occupational exposure limits established
		Mouse, Intravenous: LD ₅₀ : 5 800 mg/kg

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

n-Tetradecane	
Appearance and Odor: a colorless liquid	Freezing Point: 6 °C
Relative Molecular Mass: 198.4	Average Heat Capacity (16 to 100) °C: 0.1774 cal/g/°C
Specific Gravity @ 25 °C: 0.767	Vapor Pressure @ 76.4 °C: 1 mm mercury
Boiling Point: 254 °C	Vapor Density: 6.83
Solvent Solubility: soluble in alcohol and ether	Water Solubility: insoluble

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: 115.5 °C **Method Used:** ASTM D 92 **Autoignition Temperature:** 20 °C
109.3 °C ASTM D 93 20 °C

Flammability Limits in Air (Volume %): **UPPER:** Not available
LOWER: 0.5 %

Unusual Fire and Explosion Hazards: This material is an OSHA Flammability Class IIIB substance. n-Tetradecane is a moderate fire hazard when it is exposed to heat or flame. However, vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back. Vapor-air mixtures are explosive above flash point. Oxidizers with n-tetradecane are a fire and explosion hazard.

Extinguishing Media: Use dry chemical, carbon dioxide, water spray, or alcohol-resistant foam.

Special Fire Procedures: Fire fighters should wear a self-contained breathing apparatus (SCBA) with a full face piece operated in the pressure-demand or positive-pressure mode and full protective gear. Move container from fire area if it can be done without risk. Apply cooling water to containers that are exposed to flames until well after the fire is extinguished.

SECTION V. REACTIVITY DATA

Stability: X Stable Unstable

Conditions to Avoid: Avoid contact with heat, sparks, flames, and sources of ignition.

Incompatibility (Materials to Avoid): Keep this material from strong oxidizers.

See Section IV: *Fire and Explosion Hazard Data*

Hazardous Decomposition or Byproducts: Thermal decomposition products may include toxic oxides of carbon.

Hazardous Polymerization: Will Occur X Will Not Occur

SECTION VI. HEALTH HAZARD DATA

Route of Entry: X Inhalation X Skin X Ingestion

Health Hazards (Acute and Chronic): Inhalation of high concentrations of n-tetradecane vapors may cause respiratory tract irritation and narcotic effects. Repeated or prolonged exposure has caused dizziness, weakness, weight loss, anemia, nervousness, pain in the limbs, peripheral numbness, and paresthesias. Skin and/or eye contact may cause irritation. Repeated or prolonged contact with this material may cause dermatitis with drying and cracking due to the defatting action. Alkanes have been shown to be absorbed into human tissues.

Ingestion of n-tetradecane results in relatively low oral toxicity; it may result in nausea, diarrhea, and other gastrointestinal disturbances along with symptoms of central nervous system depression. Aspiration of the liquid into the lungs may occur.

Medical Conditions Generally Aggravated by Exposure: None

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	<u> </u>	<u>X</u>
In the International Agency for Research on Cancer (IARC) Monographs	<u> </u>	<u>X</u>
By the Occupational Safety and Health Administration (OSHA)	<u> </u>	<u>X</u>

EMERGENCY AND FIRST AID PROCEDURES :

Skin Contact: Remove contaminated shoes and clothing. Wipe off excess fluid with a dry cloth. Wash affected area well with soap and large amounts of water. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance.

Inhalation: If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration. Obtain medical assistance if necessary.

Ingestion: If ingestion occurs, wash out mouth with water. **DO NOT** induce vomiting. Obtain medical assistance immediately.

TARGET ORGAN(S) OF ATTACK: Central nervous system (CNS)

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released or Spilled: Notify safety personnel of major spills and/or leaks. Evacuate nonessential personnel. Shut off sources of ignition. Stop the leak if it can be done without risk. For small spills, take up with sand and other absorbent material and place in containers for later disposal. For larger spills, dike far ahead of spill for later disposal.

Waste Disposal: Follow all applicable federal, state, and local laws and regulations governing disposal.

Handling and Storage: Provide adequate ventilation where operating conditions (heating and spraying) may create excessive vapors and mists. Use explosion proof equipment. Provide approved respiratory apparatus for nonroutine or emergency use. Use an approved filter and vapor respirator when vapor or mist concentrations are high. Wear protective rubber gloves and chemical safety glasses where contact with liquid or high vapor concentrations may occur. Additional, suitable, protective clothing may be required depending on working conditions. An eye wash station and washing facilities should be readily available near handling and use areas. Wash exposed skin areas thoroughly after handling this material. **DO NOT** smoke in areas of use.

NOTE: Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Store material in a cool, dry, well ventilated area away from flames, sources of ignition, and incompatible materials.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: MDL Information Systems, Inc., MSDS *n-Tetradecane*, 10 September 1998.
Hawley's Condensed Chemical Dictionary, 11th Ed., 1987.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data on the MSDS. The reference values for this material are given in the NIST Report of Investigation.